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| 09/972,929 | 10/10/2001 | Richard C. Rose | 109039 | 4843 |

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| EXAMINER |
|---|
| WOZNIAK, JAMES S |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2626 | |

DATE MAILED: 08/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|  | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 09/972,929 | ROSE ET AL. |
|  | Examiner | Art Unit |  |
|  | James S. Wozniak | 2626 |  |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1)☒ Responsive to communication(s) filed on <u>26 May 2006</u>.

2a)☐ This action is **FINAL**.     2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4)☒ Claim(s) <u>1,3-9,11-14,16,21 and 24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,3-9,11-14,16,21 and 24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

### Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>10 October 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1.      In response to the office action from 5/2/2006, the applicant has submitted a request for

continued examination, filed 5/26/2006, amending claims 1, 3-5, 8, 9, 11-14, 16, and 21, while

canceling claims 2, 10, and 23 and arguing to traverse the art rejection based on the amended

limitations *(Amendment, Pages 8-9)*. The applicant's arguments have been fully considered but

are moot with respect to the new grounds of rejection in further view of Sejnoha *(U.S. Patent:*

*5,008,941)*.

### *Response to Arguments*

2.      Applicant's arguments have been fully considered but they are not persuasive for the

following reasons:

The applicant argues that, with respect to the amended limitations, Sejnoha "fails to

satisfy the deficiencies of Gong and Kosanovic" *(Amendment, Page 9)*. While the examiner

acknowledges that Sejnoha (or any of the other cited prior art) makes no mention of increasing a

periodic time for updating a transducer model when successive changes in sampled transducer

information do not exceed a threshold value in combination with the other elements of claims 1,

5, 9, or 13, the examiner notes that the currently claimed invention refers to such a limitation in

the alternative, and thus, such a limitation is not required in a prior art rejection provided that the

prior art teaches increasing a periodic background noise model sampling time when successive

changes in sampled noise information do not exceed a threshold value. The examiner points out

that such a background noise updating limitation is provided by the teachings of Kosanovic *(U.S.*

*Patent: 6,157,670) (see below rejection)*. Additionally, the other added limitation for

periodically determining parameters of a transducer model is provided by the teachings of

Sejnoha *(see below rejection)*.

In previous office actions, the examiner suggested amending the claims to indicate the

steps for adjusting the periodic times of *both* models (Final OA from 3/1/2006, Page 3 and

Advisory action from 5/2/2006) (background and transducer, i.e. increasing the background

noise model periodic update time when successive changes in sampled noise information do not

exceed a threshold value *AND* increasing the transducer model periodic update time when

successive changes in sampled transducer information do not exceed a threshold value), rather

than in an alternative format, because it was noted that Sejnoha (U.S. Patent: 5,008,941) taught

periodic sampling of transducer information (Advisory Action from 5/2/2006) . Since, as noted

above, Sejnoha (or any of the other cited prior art) makes no mention of increasing a periodic

time for updating a transducer model when successive changes in sampled transducer

information do not exceed a threshold value in combination with the other elements of claims 1,

5, 9, or 13, it is again noted that a claim amendment directed towards increasing the background

noise model periodic update time when successive changes in sampled noise information do not

exceed a threshold value *AND* increasing the transducer model periodic update time when

successive changes in sampled transducer information do not exceed a threshold value may

overcome the prior art of record.

## *Claim Rejections - 35 USC § 101*

3.      35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.      **Claims 9 and 11-12** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

**Claim 9** is drawn to a "program" data structure stored on a non-tangible computer readable medium (carrier wave) and as such is non-statutory subject matter. See MPEP § 2106.IV. Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed tangible computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. In this case, claim 13 is not directed to the recited tangible computer readable mediums disclosed on Pages 13-14 of the specification *(see disk and hardware based storage)* since it is directed to the aforementioned non-tangible computer readable medium (carrier wave), and as such is non-statutory subject matter. In order to overcome the present rejection, the examiner suggests a claim amendment directed towards indicating that the claimed computer program is stored on a tangible computer readable medium.

Dependent **claims 11-12** do not remedy the 35 U.S.C. 101 issue noted with respect to

claim 9, and thus, are also rejected under 35 U.S.C. 101 as being directed to non-statutory

subject matter.


### *Claim Rejections - 35 USC § 103*


5.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.


6.      **Claims 1, 3-9, 11-14, 16, 21, and 24** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gong (U.S. Patent: 6,418,411) in view of Kosanovic *(U.S. Patent:*

*6,157,670)*, and further in view of Sejnoha *(U.S. Patent: 5,008,941)*.

With respect to **Claims 1, 5, 9, and 13**, Gong discloses:

Determining parameters of a background model of a received voice request *(on-line noise*

*compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines*

*35-47)*;

Determining parameters of a transducer model *(one time adaptation, Fig. 1, Element 12;*

*and calculating microphone (transducer) characteristics, Col. 1, Lines 59-62)*;

Determining an adapted speech recognition model for a speech recognition model based

on at least one of the background model and the transducer model *(producing an adapted model*

*based on the inputs from the on-line noise estimation and the one-time adaptation (transducer*

*adaptation), Fig. 1, Element 20 and Col. 2, Lines 44-50).*

Determining information in the voice request based on the adapted speech recognition

model *(steps 4 and 5, Col. 2, Lines 58-61)*;

Although Gong teaches the means for determining background noise model parameters,

Gong does not teach that background noise is determined at a periodic time that can be adjusted

based at least in part on determined changes in sampled noise information, however Kosanovic

discloses an adjustable background noise update period based on a noise signal energy *(Col. 3,*

*Lines 40-65)*. Also, Kosanovic teaches increasing the periodic time when successive changes in

sampled noise information does not exceed a threshold value *(Col. 4, Lines 20-26)*.

Gong and Kosanovic are analogous art because they are from a similar field of endeavor

in speech signal processing utilizing background noise estimation. Thus, it would have been

obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings

of Gong with the adjustable background noise update period taught by Kosanovic in order to

provide a means for obtaining background noise data according to a desired accuracy

*(Kosanovic, Col. 3, Lines 52-65)*.

Gong in view of Kosanovic does not specifically suggest that a transducer model is

updated periodically, however Sejnoha teaches such a periodic transducer model update (Col. 3,

Lines 5-67; Col. 6, Line 41- Col.7, Line 17).

Gong, Kosanovic, and Sejnoha are analogous art because they are from a similar field of

endeavor in speech signal processing utilizing noise estimation. Thus, it would have been

obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings

of Gong with the means for periodically updating a transducer model as taught by Sejnoha in

order to implement more accurate speech recognition by tracking and compensating for time

variant parameters that can degrade recognition performance *(Sejnoha, Col. 3, Lines 5-17)*.

With respect to **Claims 3, 7, and 11**, Gong additionally discloses:

The parameters of the background model are determined based on a first sample period

*(sample period for background noise estimation, Fig. 2, Col. 5, Lines 29-32)*.

The parameters of the transducer model are determined based on a second sample period

*(sample for a transducer model during a one time adaptation, which takes place before on-line*

*adaptation and thus, inherently requires a second, distinct sampling period, Col. 5, Lines 23-28)*.

With respect to **Claims 4, 8, and 12**, Gong additionally discloses:

Saving at least one of the parameters of the background model and the parameters of the

transducer model *(background noise is recorded and estimated, Col. 2, Liens 43-44)*;

Determining the adapted speech recognition model based on the at least one sample

period and at least one of the background model and the transducer model *(after noise sampling,*

*the system then proceeds to produce an adapted model based on the inputs from on-line noise*

*compensation, Fig. 1, Element 19; and one-time adaptation (transducer adaptation), Fig. 1,*

*Element 20; and Col. 2, Lines 44-50)*.

**Claim 6** contains subject matter similar to Claim1, and thus, is rejected for the same

reasons.

With respect to **Claim 14**, Gong recites:

Determining user specific parameters of a background model for a received voice request *(on-line noise compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines 35-47; and speaker-adapted models, Fig. 1, Element 12).*

Determining parameters of a background model of a received voice request *(on-line noise compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines 35-47)*;

Determining parameters of a transducer model *(one time adaptation, Fig. 1, Element 12; and calculating microphone (transducer) characteristics, Col. 1, Lines 59-62)*;

Determining an adapted speech recognition model for a speech recognition model based on at least one of the background model and the transducer model *(producing an adapted model based on the inputs from the on-line noise estimation and the one-time adaptation (transducer adaptation), Fig. 1, Element 20 and Col. 2, Lines 44-50).*

Determining information in the voice request based on the adapted speech recognition model *(steps 4 and 5, Col. 2, Lines 58-61)*;

Although Gong teaches the means for determining user specific background noise model parameters, Gong does not teach that background noise is determined at a periodic time that can be adjusted based at least in part on determined changes in sampled noise information, however Kosanovic discloses an adjustable background noise update period based on a noise signal energy *(Col. 3, Lines 40-65)*. Also, Kosanovic teaches increasing the periodic time when successive changes in sampled noise information does not exceed a threshold value *(Col. 4, Lines 20-26).*

Gong and Kosanovic are analogous art because they are from a similar field of endeavor

in speech signal processing utilizing background noise estimation. Thus, it would have been

obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings

of Gong with the adjustable background noise update period taught by Kosanovic in order to

provide a means for obtaining background noise data according to a desired accuracy

*(Kosanovic, Col. 3, Lines 52-65)*.

Gong in view of Kosanovic does not specifically suggest that a transducer model is

updated periodically, however Sejnoha teaches such a periodic transducer model update (Col. 3,

Lines 5-67; Col. 6, Line 41- Col.7, Line 17).

Gong, Kosanovic, and Sejnoha are analogous art because they are from a similar field of

endeavor in speech signal processing utilizing noise estimation. Thus, it would have been

obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings

of Gong with the means for periodically updating a transducer model as taught by Sejnoha in

order to implement more accurate speech recognition by tracking and compensating for time

variant parameters that can degrade recognition performance *(Sejnoha, Col. 3, Lines 5-17)*.

With respect to **Claim 16**, Gong recites;

Sampling periods of speech inactivity while receiving the voice request *(speech pauses,*

*Col. 5, Lines 29-32)*.

With respect to **Claims 21 and 24**, Kosanovic discloses:

Dynamically determining the periodic time based, at least in part, on a magnitude of

determined changes in the sampled noise information *(Col. 3, Lines 40-65)*.

*Conclusion*

7.    The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

Noso et al *(U.S. Patent: 4,597,098)*- teaches a method for the periodic update of

background noise and microphone parameters in a speech recognition system.

Komori et al (U.S. Patent: 7,050,974)- teaches a method for adapting a speech

recognition model based on background noise and microphone characteristics.

8.    Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632.

The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
6/26/2006

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